

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claim 1. (Currently Amended) An apparatus for providing purified water comprising:

- A. a heat exchanger for exchanging heat between purified water and makeup water, having a makeup water inlet and a preheated makeup water outlet; at least one heat exchange surface between said purified water and makeup water, a treated water inlet, and at least two or more treated water outlets, wherein said treated water outlets provide purified water at different temperatures; and
- B. a water heater tank with a tank inlet and a tank outlet, capable of heating said makeup water to a temperature sufficient to inactivate selected organisms and provide purified water;

wherein said tank inlet is connected to said heat exchanger preheated makeup water outlet and said tank outlet is connected to said heat exchanger treated water inlet.

Claim 2. (Previously Presented) The apparatus according to Claim 1, wherein said two or more treated water outlets are located upstream or downstream from each other respectively.

Claim 3. (Cancelled).

Claim 4. (Original) The apparatus according to Claim 1, further comprising three or more treated water outlets on said heat exchanger for removing purified water at different temperatures therefrom.

Claim 5. (Original) The apparatus of Claim 1, comprising a monitoring device for sensing water temperatures at one or more locations of said apparatus.

Claim 6. (Original) The apparatus according to Claim 5, comprising a monitoring device for determining time/temperature relationships at one or more locations of said apparatus to determine if water has been purified to a predetermined amount.

Claim 7. (Original) The apparatus according to Claim 6, wherein said monitoring device provides signals perceptible by a user at one or more locations as to the status of temperature, or time/temperature conditions or relationships for purification of water at various locations on said apparatus.

Claim 8. (Original) The apparatus according to Claim 7, wherein at least one of said locations is on or in said water heater tank.

Claim 9. (Original) The apparatus according to Claim 8, wherein said monitoring device shuts off one or more treated water outlets whenever predetermined temperature, or time/temperature conditions or relationships are not met.

Claim 10. (Original) The apparatus according to Claim 9, wherein said monitoring device shuts off water flow through the purified water apparatus whenever predetermined temperature, or time/temperature conditions or relationships are not met.

Claim 11. (Original) The apparatus according to Claim 10, wherein said monitoring device reopens said water flow when said predetermined conditions are restored.

Claim 12. (Original) The apparatus according to Claim 7, wherein said monitoring device emits an audible signal perceptible by a user at one or more locations whenever predetermined temperature, or time/temperature conditions or relationships are not met.

Claim 13. (Original) The apparatus according to Claim 7, wherein said signal comprises one or more lights at one or more locations.

Claim 14. (Original) The apparatus according to Claim 7, wherein said signal comprises a digital display of one or more conditions sensed.

Claim 15. (Original) The apparatus according to Claim 1, comprising bypass means for bypassing said heat exchanger with makeup water and interrupting the flow of makeup water through said heat exchanger.

Claim 16. (Original) The apparatus according to Claim 15, wherein said bypass means comprises;

- A. a valve connected to said inlet of said heat exchanger, said valve operable to stop makeup water flow to said heat exchanger and redirecting said flow of makeup water; and
- B. water lines connected to one outlet of said valve for receiving redirected makeup water from said valve and redirecting said makeup water to said water heater.

Claim 17. (Original) The apparatus according to Claim 1, comprising a second tank for storage and/or heating of purified heated water.

Claim 18. (Currently Amended) The apparatus according to Claim 1, comprising a dip tube connected to said tank inlet within said tank and a brush-type diffuser at the outlet of said dip tube to reduce the velocity of the makeup water and maintain temperature stratification within said water heater tank.

Claim 19. (Currently Amended) The apparatus according to Claim 1, comprising a dip tube connected to said tank inlet within said tank and a flexible cone diffuser at the outlet of said dip tube to reduce the velocity of the makeup water and maintain temperature stratification within said water heater tank.

Claim 20. (Original) The apparatus according to Claim 1, comprising at least one baffle

in said water heater tank for reducing mixing of hot water in the upper portion of said water heater tank with cooler water in the lower portion of said water heater tank.

Claim 21. (Original) The apparatus according to Claim 20, wherein said at least one baffle comprises a floating baffle having a predetermined specific gravity.

Claim 22. (Original) The apparatus according to Claim 21, wherein said floating baffle comprises a plurality of floats having a predetermined specific gravity.

Claim 23. (Original) The apparatus according to Claim 22, wherein said plurality of floats comprises a plurality of spheres, ovoids, cubes or other shaped structures having a predetermined specific gravity.

Claim 24. (Original) The apparatus according to Claim 20, wherein said baffle comprises a heated baffle system.

Claim 25. (Original) The apparatus according to Claim 20, wherein said baffle comprises a heated baffle.

Claim 26. (Original) The apparatus of Claim 1 wherein said water heater tank is heated by heating means utilizing an energy source selected from the list consisting of natural gas, propane, butane, fuel oil, electricity, steam, and heat from a heat pump.

Claims 27 - 47 (Cancelled).

Claim 48. (Currently Amended) A water purifier comprising:

A. a heat exchanger for exchanging heat between purified water and makeup water, and having a makeup water inlet and a preheated makeup water outlet; and a hot treated water inlet and at least two treated water outlets for withdrawing treated water at a reduced temperature, wherein said treated water outlets provide purified water at different temperatures;

B. a water heater with an inlet and an outlet, capable of heating said makeup water to a temperature sufficient to inactivate selected organisms and provide purified water;

wherein said water heater inlet is connected to said heat exchanger preheated makeup water outlet and said water heater outlet is connected to said heat exchanger hot treated water inlet; and

C. at least one mixing valve with an outlet and at least two inlets having a first inlet connected to one treated water outlet of said heat exchanger, for obtaining purified water at a reduced temperature therefrom, and a second inlet connected to said water heater outlet for obtaining hot purified water, wherein said mixing valve provides purified water at said mixing valve outlet at an intermediate temperature between said hot purified water and said reduced temperature purified water.

Claim 49. (Original) The water purifier according to Claim 48, wherein said heat exchanger comprises a counter-flow heat exchanger.

Claim 50. (Original) The water purifier according to Claim 48, wherein said water heater comprises a tank-type water heater.

Claim 51. (Currently Amended) The water purifier according to Claim 49, wherein said water purifier is capable of heating said makeup ~~purified water is heated~~ to between 140°F (60°C) and the saturation temperature of the water.

Claim 52. (Currently Amended) The water purifier according to Claim 51, wherein said water purifier is capable of heating said makeup ~~water is heated~~ for a time sufficient to provide a thermal dose for selected organisms.

Claim 53. (Original) The heat exchanger according to Claim 48, wherein said water purifier comprises two mixing valves, wherein the second mixing valve is connected to the same sources of hot and cold purified water as the first mixing valve.

Claims 54 - 91 (Cancelled).

Claim 92. (Original) An apparatus for providing treated water comprising:

- A. a heat exchanger having a first section and a second section located upstream from said first section for exchanging heat, wherein said first section exchanges heat between water from an auxiliary heater to ~~and~~ makeup water, and said second section exchanges heat between water from an auxiliary heater to water from a water tank, said heat exchanger first section having a makeup water inlet and a preheated makeup water outlet; at least one heat exchange surface in said first section between said water from said auxiliary heater and makeup water, said heat exchanger second section having at least one surface between said water from said auxiliary heater and said water from said water tank, said second heat exchanger section having an inlet for water from said auxiliary heater water and an outlet for water to said auxiliary water heater, an inlet for water from said water tank, and said first section having at least one or more treated water outlets;
- B. a water heater tank with a tank inlet and a tank outlet, wherein said tank inlet is connected to receive water from said first section heat exchanger preheated makeup water outlet and said tank outlet is connected to deliver water to a second section inlet for water from said water tank; and wherein said water tank and said auxiliary heater are capable of heating said makeup water to a temperature sufficient to inactivate selected organisms and provide treated water; and
- C. an auxiliary heater having an inlet connected to an outlet from said second section of said heat exchanger for receiving water from said water tank that has been preheated in said second heat exchanger section, and said auxiliary heater having an outlet connected to said inlet on said second section heat exchanger for water from said auxiliary heater.

Claim 93. (Currently Amended) An apparatus for providing treated water comprising:

- A. a heat exchanger for exchanging heat between treated water and makeup water, having a makeup water inlet and a preheated makeup water outlet; at least one heat exchange surface between said treated water and makeup water, a treated water inlet, and at least two or more treated water outlets, wherein said treated water outlets provide water at different temperatures; and
- B. a water heater tank with a tank inlet and a tank outlet, capable of heating said makeup water to a temperature sufficient to inactivate selected organisms and provide treated water;

wherein said tank inlet is connected to said heat exchanger preheated makeup water outlet and said tank outlet is connected to said heat exchanger treated water inlet.

Claim 94. (Previously Presented) The apparatus according to Claim 93, wherein said two or more treated water outlets are located upstream or downstream from each other respectively.

Claim 95 (Cancelled).

Claim 96. (Original) The apparatus according to Claim 93, comprising bypass means for bypassing said heat exchanger with makeup water and interrupting the flow of makeup water through said heat exchanger.

Claim 97. (Original) The apparatus according to Claim 93, wherein said bypass means comprises;

- A. a valve connected to said inlet of said heat exchanger, said valve operable to stop makeup water flow to said head exchanger and redirecting said flow of makeup water; and
- B. water lines connected to one outlet of said valve for receiving redirected makeup water from said valve and redirecting said makeup water to said water heater.

Claim 98 (Cancelled).

Claim 99. (Currently Amended) A water treating system comprising:

A. a heat exchanger for exchanging heat between treated water and makeup water, and having a makeup water inlet and a preheated makeup water outlet; and a hot treated water inlet and at least two outlets for withdrawing treated water at a reduced temperature, wherein said treated water outlets provide treated purified water at different temperatures;

B. a water heater with an inlet and an outlet, capable of heating said makeup water to a temperature sufficient to inactivate selected organisms and provide treated water;

wherein said water heater inlet is connected to said heat exchanger preheated makeup water outlet and said water heater outlet is connected to said heat exchanger hot treated water inlet; and

C. at least one mixing valve with an outlet and at least two inlets having a first inlet connected to one treated water outlet of said heat exchanger, for obtaining treated water at a reduced temperature therefrom, and a second inlet connected to said water heater outlet for obtaining hot treated water, wherein said mixing valve provides treated water at said mixing valve outlet at an intermediate temperature between said hot treated water and said reduced temperature treated water.

Claim 100. (Original) The water treating system according to Claim 99, wherein said heat exchanger comprises a counter-flow heat exchanger.

Claim 101. (Original) The water treating system according to Claim 99, wherein said water heater comprises a tank-type water heater.

Claims 102 -106 (Cancelled).